3.) ○ 3-man jury { 2 people: prob. p of making correct decision

1 person: flips a coin to make dech

○ 1 man jury { prob. p of making correct decision

Which is better?

Soln

p^2: case when coin toss doesn't matter

$2p(1-p)$: split $\xrightarrow{\frac{1}{2}}$ $p(1-p)$: correct decision is actually made with coin's support

$\Rightarrow p^2 + p(1-p) = \boxed{p}$

This is identical to the second case of 1-man.

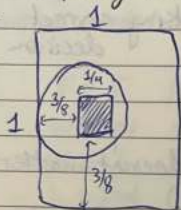4.) On average, how many times a die must be thrown until one gets a 6?

Soln

$m = p(1) + q(1+m) \Rightarrow \boxed{m = 1/p}$

$p = \frac{1}{6} \Rightarrow \boxed{m = 6}$ Ans

(5.) Penny $\frac{3}{4}$ inch in diameter. A square grid of 1 inch.
If penny lands entirely in a square, he wins 5¢
but doesn't get his penny back, otherwise looses
his penny. What is the prob. of him winning?

Sol

$$\left(\frac{1}{4}\right)^2 = \boxed{\frac{1}{16}}$$

(6.) A player must bet on 1, 2, 3, 4, 5 or 6. 3 dices rolled.
If player no. appears once, twice or thrice,
he gets that multiple of his stake along with
his stake back. Players expected loss/unit stake?

Sol

ⓐ 3 diff numbers: house won 0, you won 0.
ⓑ 2 alike, 1 diff: house won $\frac{1}{6}$, you lost 1/6
ⓒ 3 alike: house won 2/6, you lost 2/6

$$\frac{120}{216} \times 0 + \frac{90}{216} \times \frac{1}{6} + \frac{6}{216} \times \frac{2}{6} = \boxed{\frac{17}{216} \approx 0.079}$$

Ans

have your expectation go near $5.

11) two strangers are separately asked to choose one positive whole no. and both choose same no. then both get prize. What no. would you choose?

Mostly anecdotally 1, 3, 7 are popular ones.

→ Most people chose 1.